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09/806,415	01/14/2003	Joerg Hauptmann	82300	8688

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EXAMINER	
WONG, WARNER	
ART UNIT	PAPER NUMBER
2616	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/806,415	HAUPTMANN ET AL.	
	Examiner	Art Unit	
	Warner Wong	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 6-21* is/are rejected.

7)☒ Claim(s) *3-5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: on line 4, the limitation "high-pas filter" should be grammatically corrected as "high-pass filter".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 6-17, and 21 are rejected under 35 U.S.C. 102(b) as being unpatentable over Rybicki et al. (US 5,781,728) in view of O'Toole (US 5,889,856).

Regarding claim 1, Rybicki discloses a line terminating device (fig. 3) for a subscriber line which transmits and receives broadband signals via a single subscriber line (col. 3, lines 12-14), a broadband signal being composed of a broadband or narrow band audio frequency voice signal (ISDN – col. 3, lines 12-14, POTS – col. 3, lines 38-41), and a broadband higher frequency data signal (ADSL – col. 3, lines 12-14), and the frequency bands of the voice signal and of the data signal essentially not overlapping (col. 4, lines 8-11), characterized in that a frequency separating filter is provided which separates the audio-frequency voice signal and the higher frequency data signal from

one another (col. 3, lines 60-63) and the frequency separating filter is arranged in the digital section of the terminating device (col. 5, lines 42-45).

Rybicki also discloses an analog/digital converter (fig. 14, #223), a digital/analog converter (fig. 4 and 6, #118),

Rybicki does not disclose that the digital frequency filter separates the digital received signal into a first digital voice signal and first digital data signal and combines a second digital voice signal and a second digital data signal to form the digital transmit signal.

O'Toole teaches a digital frequency separating splitter (filter) that separates the digital received signal into a first digital voice signal and first digital data signal and combines a second digital voice signal and a second digital data signal to form the digital transmit signal (abstract & fig. 5, digital splitter which performs the equivalent of the analog splitter (fig. 2, analog splitters #12,16) comprising low-pass filter & high-pass filters (see fig. 3, diagram of analog splitter) which splits and combines xDSL and POTS signals).

At the time of the invention, It would have been obvious to one of ordinary skill in the art to add the filtering circuit taught in O'Toole to the line termination device disclosed in Rybicki.

The motivation for combining the teaching is that it eliminates the use of analogy splitter/filters which uses bulky, expensive inductor coils (O'Toole, abstract).

Regarding claim 6, Rybicki discloses that the digital frequency separating filter has a noise shaper filter which follows the digital adder (col. 7, line 19).

Regarding claim 7, Rybicki discloses an oversampling sigma/delta ADC (col. 4, lines 23-25).

Regarding claim 8, Rybicki discloses a digital signal processor (col. 3, lines 42-43).

Regarding claim 10, Rybicki discloses a DAC followed by a power cutback circuit for cutting back the power spectrum distribution (Column 10, lines 50-55).

Regarding claim 11, Rybicki discloses that the voice signal is an ISDN voice signal (col. 3, lines 12-14) and that the higher-frequency signal is an ASDL signal (col. 3, lines 12-14).

Regarding claim 12, Rybicki discloses that the voice signal is a POTS signal (col. 3, lines 38-41) voice signal and that the higher-frequency signal is an ASDL signal (col. 3, lines 12-14).

Regarding claim 13, Rybicki discloses that frequency separating filter is designed with a number of channels, in which arrangement in each case POTS/ISDN voice signals and ADSL data signals can be transmitted via the multiplicity of channels (col. 1, lines 46-48).

Regarding claim 14, Rybicki discloses that the digital frequency separating filter has an echo canceller which is arranged both between an upstream signal path and a downstream path (col. 9, line 55).

Regarding claim 15, Rybicki discloses that the echo canceller is provided for coarse correction and filters out an interference signal fed back by the digital separating filter (col. 9, lines 50-56).

Regarding claim 16, Rybicki discloses that the echo canceller is only used with the ADSL and ISDN signals (col. 9, lines 50-56).

Regarding claim 17, Rybicki discloses that the line terminating device has interfaces to the transceiver circuits for the ISDN/POTS signal and ADSL signal and/or the transceiver circuits themselves have in each case at least one further echo canceller which is used for fine correction of the interference signal set back in each case (col. 9, lines 50-56).

Regarding claim 21, Rybicki discloses that the digital frequency separating filter has at least one sampling rate adaptation stage and a clock synchronization unit which ensures that the sampling rates of the respective signal streams are equal magnitude at the summation point and at the splitting point (Figures 12 and 14, Column 9, lines 40-48). It is inherent that a down-sampler would have a synchronized clock that ensured that the sampling rates were the same at various points throughout the circuit.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rybicki in view of O'Toole as applied to claim 1 above, and further in view of Foley (US 6,414,952).

Regarding claim 9, Rybicki and O'Toole combined disclose all the limitations except that the ADC is preceded by an automatic gain control circuit for controlling the amplitude of the received broadband analog signal.

Russell discloses DSL receiver with an automatic gain controller (fig. 6, gain control amplifier 601 preceding the ADC 603).

At the time of the invention, It would have been obvious to one of ordinary skill in the art to add the automatic gain control circuit preceding the ADC as taught by Foley for the combined line termination device described by Rybicki and O'Toole.

The motivation for combining the teachings is that having the gain control amplifier will bring the received signal into a preferred range for linear sampling by the ADC (Foley, col. 9, lines 8-11).

4. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rybicki in view of O'Toole as applied to claim 1 above, and further in view of Xu (US 6,005,854).

Regarding claims 18-19, Rybicki and O'Toole combined disclose all the limitations except that a pulse shaper follows the ADSL data signal.

Xu teaches a pulse shaper and combiner (Figure 2, Ref No. 150 and Column 4, lines 16-24).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to add the pulse shaper taught in Xu to the line termination device disclosed in Rybicki in view of O'Toole.

The motivation for doing so would be to create a communication system which reduces the channel capacity used to synchronize a remote terminal once a link is established (Xu, col. 2, lines 4-7).

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rybicki in view of O'Toole as applied to claim 1 above, and further in view of Chao (US 5,790,539).

Regarding claim 20, Rybicki discloses that the digital frequency separating filter together with a transformer, a line driver circuit, and a coded circuit are integrated on a single chip. It is inherent that any xDSL and POTS/ISDN combined termination device as disclosed in Rybicki (fig. 3) would have a transformer, a line driver circuit, and a compressor/de-compressor.

Rybicki in view of Russell does not disclose that all of the circuits could be combined on a single chip.

Chao teaches a system that has a variety of circuits all on a single chip (fig. 5).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to add the pulse shaper taught in Chao to the line termination device disclosed in Rybicki in view of Russell.

The motivation for doing so would be to save space on a circuit board that could be used to create even more functionality for the system.

Allowable Subject Matter

6. Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to separately describe a second high-pass filter (HPF) and a digital low-pass filter (LPF) at the transmitting side on top of a first HPF and a first LPF at the receiving side. Such claim 3 limitations are explicitly depicted in fig. 1 & described on pp. 11-12 of the instant application. The closest prior art, such as fig. 3 of O'Toole (US 5,889,856), fig. 2 of Hjartarson (US 6,259,343) and fig. 9 of Tore (US 6,870893) disclose conventional xDSL modem using 1 instead of 2 separate pairs of transmit and receive HPF/LPF, hence failing to anticipate or render the above features.

Response to Arguments

7. Applicant's arguments filed 11/30/2006 have been fully considered but they are not persuasive.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Warner Wong whose telephone number is 571-272-8197. The examiner can normally be reached on 6:30AM - 3:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER

Warner Wong
Examiner
Art Unit 2616

WW